

## EDITORIAL.

LYCAENA ARION. AN APPEAL FOR ITS PRESERVATION.—The Committee appointed by the Entomological Society of London to secure the preservation of certain species of British Lepidoptera whose existence is at present threatened, are taking measures, which it is hoped will assist the Cornish race of *Lycaena arion* to maintain itself. They are satisfied it still exists in certain of the localities where it was abundant twenty or thirty years ago though in greatly reduced numbers. They are of opinion that if this race, the finest of all British local forms, of our, in certain respects, most interesting and beautiful butterfly, is to continue to exist, it is absolutely necessary that collecting of it should cease until the stock is replenished. They therefore appeal to all Entomologists to assist by every means in their power to protect it for the present by not collecting specimens themselves, and by using their influences with those who would otherwise do so.

There seems very little doubt, but that *L. arion*, if sympathetically treated, will in a few years attain much of its former abundance. Entomologists, who contemplate visiting N. Cornwall for the purpose of collecting other insects will assist the Committee and avoid difficulties by writing to me. I will then put them in touch with residents who are interested in the preservation of this butterfly.—H. M. EDELSTEN, *Hon. Sec.*, "Hillside," Lindfield, Sussex.

[We shall be pleased to receive suggestions and comments.—EDS.]

### New Aberrations of *Hyloicus pinastri*, L., and their mode of Inheritance. (Plate I.)

By E. A. COCKAYNE, D.M., F.R.C.P., F.E.S.

One of the most interesting and finest exhibits shown at the Annual Exhibition of the South London Entomological and Natural History Society in 1925 was the series of *Hyloicus pinastri*, L., bred by Mr. M. Mactaggart. In addition to the typical form three striking aberrations were represented, two of which, so far as I am aware, have never been taken before either in this country or abroad. As he had bred them for three generations I felt sure he must have sufficient material to show their mode of inheritance and wrote asking him to publish it, but instead of doing so he has most kindly given me full particulars with permission to communicate them to this journal.

I will begin by describing the new aberrations.

Ab. **albescens**, ab. nov. Ground colour of head, thorax, abdomen and wings cream colour; forewing thinly dusted with brown scales, the two transverse lines and the space between them along the inner margin pale buff, apical stripe pale buff or obsolete, white discal spot almost invisible on the light ground colour, the three central longitudinal streaks light brown or pale buff; hindwings cream with thin dusting of brown scales; fringes white with pale buff chequers at nervures; longitudinal stripes on thorax light or fairly light brown; longitudinal stripes on abdomen light brown or greyish brown.

Ab. **albicolor**, ab. nov. Ground colour of head, thorax, abdomen and wings cream coloured; wings, especially hindwings, rather heavily dusted with brown scales giving them a light brown tint; apical stripe and transverse lines on forewings very light brown; the three central

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streaks fairly dark brown; discal spot white; fringes white with light brown chequers at nervures; thoracic stripes dark brown; abdominal stripes fairly dark brownish grey; rest of abdomen heavily dusted with brown scales. The name is intended to indicate the union of *albescens* and *unicolor* in this aberration.

Both aberrations lack the grey appearance of the type.

The third aberration should, I think, be referred to *ab. unicolor*, Tutt. This was described from a single specimen in the British Museum derived from the Leech collection and labelled Berlin. Presumably it came from the Mützell collection, so that it is unlikely that it was really taken near Berlin. Mr. Mactaggart's specimens are a good deal darker than the one in the Museum, but that is old and probably it has faded, and they have only a few light scales near the apex and hinder angle of the forewings instead of a thin powdering of light scales all over them. The figure in Seitz is much browner than the original and conveys no idea of the depth of colour of the Suffolk examples, which are nearly black. The blackness is relieved by the chequered fringes, which are white in the middle of each inter-neural space. The ventral surface of the palpi are white and there is a white stripe just above the eye; the hairs on the proximal part of each abdominal segment are white and form a lateral row of spots, and in the males a tuft of white hairs springs from the proximal part of the first three abdominal segments in the line of the subdorsal stripe; the distal extremities of tarsi and tibiae are white also.

The capture of the original specimens was reported in the *Entomologist*, 1922, LV., p. 236, but Mr. Mactaggart has given me fuller particulars. After many days of fruitless search all were found in an area not much larger than a lawn tennis court; on August 1st, two pairs (males worn), on August 3rd, one pair (male worn) and one female just expanding its wings, on August 9th two pairs (males worn), on August 12th one male newly emerged (empty pupa case found), on August 14th one female (worn), on August 15th one pair (male worn), and on August 16th one female newly emerged. Although further search was made until the end of the month no more were taken. Excluding the worn specimens which may have flown from a distance, the others, eight females and one male, were probably the offspring of a single female. All these except one were typical, the remaining one a female being *ab. albicolor*. This female found paired with a typical male was the insect from which all those bred in 1923 and 1924 were descended, and these broods prove that both *ab. albescens* and *ab. unicolor* are simple Mendelian recessives and that *ab. albicolor* is a recessive homozygous for *albescens* and *unicolor* as well. The fact that it is the double recessive no doubt accounts for its darker coloration, the double dose of the factor for black modifying to a small extent the whitish tint of *albescens*.

In the bred male *albicolor* the left hindwing is darker than the right as the photograph shows quite clearly.

If *w* be taken as the symbol for *albescens*, which I will call white, and *b* for the black *unicolor*, *W* and *B* will be the symbols for the corresponding dominants, and any insect with *W* and *B* in its constitution will have a typical facies. The original typical male was in all probability one of the same brood as the female and was heterozygous for white with its constitution *WwBB* (zygotes *WB* and *wB*), the

female *albicolor* being *wbbb* (zygotes *wb* and *wb*). The expected proportions in such a mating are 50% *WwBb*, typical in appearance, and 50% *wwBb*, white. The actual members of the brood, which emerged in June, 1923, were 7 types, 5 males and 2 females, and 6 white, 2 males and 4 females, and the result is as near the expected equality as the uneven number permits. No *albicolor* were bred, nor were they to be expected, if my assumption that they are recessive for both aberrational forms be correct. Two of the typical specimens were paired, both heterozygous for both white and black, *WwBb*. The anticipated result of this mating is 1 *WWBB*, 2 *WWBb*, 2 *WwBB*, 4 *WwBb*, all nine typical, 1 *wwBB*, 2 *wwBb*, all three white, 1 *WWbb*, 2 *Wwbb*, all three black, and 1 *wbbb*, *albicolor*. The actual result was 26 typical, 12 males and 14 females, 11 white, 6 males and 5 females, 11 black, 4 males and 7 females, and 1 *albicolor*, a male. The anticipated ratio of type : white : black : *albicolor* : to the nearest round number in this brood of 49 was 28 : 9 : 9 : 3, which is very close to the actual figures 26 : 11 : 11 : 1. These were bred in May and June, 1924 and a single pairing between two typical specimens was obtained but no eggs were laid. Had this pairing been successful there were four possible results, all types, type : white 3 : 1, type : black 3 : 1, or the 9 : 3 : 3 : 1 ratio as in the 1923 brood. White crossed with black might give any one of four results, all types, type : white 1 : 1, type : black 1 : 1, or type, white, black and *albicolor* in equal numbers. Two whites, two blacks or two *albicolor* paired together would give all whites, all blacks or all *albicolor* respectively.

Mr. Mactagart is to be congratulated on his good fortune in finding a double recessive as well as on his skill in breeding from it so successfully and his care in recording his results so accurately. The likelihood of anyone repeating the experiment is very small.

*Pinastri* can scarcely be regarded as native in the sense that many of our moths are, if it be true that the pines in the midland and southern parts of England were all destroyed and that the tree was replanted in comparatively modern times. There is however, little doubt that it introduced itself naturally. Tutt on the strength of a letter in the *Ent. Record*, VII., p. 218, thought that a few pupae placed for a joke in a small Suffolk wood accounted for their presence, but this hoax occurred in 1880 or 1881 and the moth had been seen in 1875 at Woodbridge, in 1876 at Wickham Market and in 1877 at Tuddenham, Waldringfield and Woodbridge, and its larvae at Leiston in 1878 and 1879. It seems to have been as common and as widely distributed before 1880 as it is at the present day.

It is possible that the aberrations are of recent origin and that *unicolor* arose independently here and on the continent, but on the other hand they may have existed in Suffolk for many years. *Pinastri* has never been taken in very large numbers, if one may judge by the summary of the captures of the last fifty years published in the *Entomologist*, 1925, LVIII., pp. 224-225, by the Rev. T. N. Waller and supplemented by the editor. Uncommon recessive forms of so scarce a species may easily have escaped observation especially if restricted to one wood.

Between July 24th, and August 12th, 1922, I saw 28 *pinastri* all typical in the district bounded by Leiston on the North and Woodbridge on the South in six different woods, but like Mr.

Mactaggart I found them very local. Most of them were newly emerged females and I took one or two day after day in five small areas. In other parts of the same woods I never found one, and in some woods, although I searched nearly every day, I never saw a specimen at all. They were resting at a height of two to twelve feet up the trunks in every case except one on the sheltered side. The single ones were sitting vertically head upwards and the pairs had also aligned themselves in the long axis of the tree sometimes with the male and sometimes with the female uppermost. I found one female which was beginning to lay its eggs on the bark of a pine and which must have been paired with a male sitting a few inches away, but the eggs were infertile.

Mr. Mactaggart says he tried to obtain eggs from every female except the newly emerged ones and got hundreds, but 40 to 60 per cent. proved to be infertile, and he only succeeded in bringing to maturity about 30 per cent. of the larvae from the earliest brood; the rest, about 400, were killed by frost in October.

The infertility of the eggs or their inability to develop does not seem to be selective picking out those homozygous or heterozygous for the aberrational forms, because with the exception of *albicolor* they appeared in more than the expected numbers. Inbreeding may be the explanation, but it is not probable in the case of an insect with so powerful a flight. The fact is interesting and merits further investigation. Infertility coupled with the lateness of the larvae and their susceptibility to frost perhaps accounts for the relative scarcity of *pinastri* and its inability to spread in this country.

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### Butterfly.

While turning over the pages of that wonderful work of Scudder, *The Butterflies of New England*, the most striking of the earlier of the modern intensive methods of study and the work which, our revered late editor once told me, was the model incentive of his own studies, I came across the following interesting note in an "Excursus."

"As to the very word 'butterfly' itself, there has been much written, but, strangely, as it seems to me, the persons best qualified by their philological learning are least assured concerning the derivation of the name. Skeat and Murray can hardly be entomologists. 'It has amused many to devise guesses to explain the name,' says Skeat. Mr. Frederick Clarkson, in the *Canadian Entomologist* (XVII. 44) thinks there is a good reason to believe that the root meaning of the word 'dates back to early Egyptian history, and as a hieroglyphic it is synonymous as representing the qualities of completeness and perfection which characterise the soul.' All of which I, in my ignorance, judge to be humbug. One distrusts much of the reasoning drawn from hieroglyphs, for it would seem in general that almost any meaning can be drawn from them by dilettanteism if only sufficient ingenuity is put in. An English writer, whose name I do not now recall (was it Miss Mitford), has strenuously upheld the idea that a butterfly was simply a *better* sort of fly, laughing to scorn the common notion, which seems to me, as I think it must to all entomologists, to be unquestionably the correct one, that the word is simply an expressive name given to